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UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

**FARMERS' STOCK
PEANUTS**

INSPECTION INSTRUCTIONS

**REVISED
JUNE 1973**

FOR USE OF USDA INSPECTORS

**FRUIT AND VEGETABLE DIVISION
FRESH PRODUCTS STANDARDIZATION AND INSPECTION BRANCH
WASHINGTON, D.C.**

U.S. DEPT. OF AGRICULTURE
NORTH AFRICA DIVISION

JAN 14 1977

605132

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UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
FRUIT AND VEGETABLE DIVISION
FRESH PRODUCTS STANDARDIZATION AND INSPECTION BRANCH

FARMERS' STOCK PEANUTS

INSPECTION INSTRUCTIONS 1/

PART I

GENERAL

This handbook contains instructions and information dealing with the inspection and grading of farmers' stock peanuts. The term "farmers' stock peanuts" means picked or threshed peanuts produced in the United States which have not been shelled, or otherwise changed (except for removal of foreign material, loose shelled kernels, and excess moisture). (1)

This handbook consists mainly of detailed instructions on inspection policies and procedures, but the latter portion of it devoted to a step-by-step outline of the inspection procedure. Instructions dealing with the responsibility and conduct of an inspector will be found in the general shipping point inspection handbook. (2)

AUTHORITY FOR INSPECTION

Authority for the Inspection Service is provided in Service and Regulatory Announcements No. 93 (SRA-AMS 93, Revised). Section 51.15 of the regulations which is especially pertinent reads as follows: "Accessibility of Products. The applicant shall cause the produce for which inspection is required to be made reasonably accessible for sampling or inspection and to be so placed as to disclose their quality or condition. Samples of the products drawn for examination shall be inspected only under such conditions as, in the opinion of the inspector, will permit a true and correct determination to be made of their quality or condition." (3)

1/ These instructions supersede "Farmers' Stock Peanuts" Inspection Instructions Revised June 1972

INSPECTION EQUIPMENT

- (4) When inspections are made on the premises of the sheller or warehouseman, he usually furnishes the major inspection equipment. However, at many points, the equipment is supplied by the Inspection Service. In locations where there is a central grading station or a separate inspection office, it is probable that all of the inspection equipment will be provided by the Inspection Service.
- (5) The inspector in charge of each station shall make sure that all necessary equipment is available and in good working order. He shall notify his supervisor immediately if any equipment is not available or not working properly.
- (6) Standard Items. Listed below are the essential items of equipment for the inspection of farmers' stock peanuts.

Sample Mechanical Divider

Scales for accurately weighing inspection sample and various component parts of the graded sample. High quality scales increase speed and accuracy.

Large Screen for separating foreign material.

Pre-Sizer.

Mechanical Sheller.

Screen Shaker.

Sizing Screens.

| | <u>Runner type</u> | <u>Spanish and Valencia Type</u> | <u>Virginia Type</u> |
|-------------------------|--------------------|--------------------------------------|---|
| Size of Openings: | 16/64" slot | 15/64" slot | 15/64" slot 16/64" slot 21.5/64" slot |
| Pre-Sizer spacing | | | 34/64 inch |

Kernel Splitter.

Moisture Tester.

Percentage Computer.

Certificate Forms.

Daily Report Sheets. (Grade Tabulation Sheets)

Horn or Pointed Scoop for sampling from sacks.

Sample Containers. At least 6, either 16 quart pails or suitable substitute.

Machines. The following paragraphs are devoted to a discussion of the mechanical equipment available for inspection work and instructions for its operation. (7)

Spout Sampler. This automatic sampling device was developed by the U. S. Dept. of Agriculture, and its use for peanuts was approved by the Inspection Service. However, it has been generally displaced by the newer pneumatic sampler. The spout sampler makes it necessary to unload peanuts and run them through an elevator conveyor for sampling, whereas the pneumatic sampler draws its sample from the load on the truck. (8)

The interval between sampling passes made by the sampler is controlled by the timer. Vary the setting of the timer, depending upon the size of the load being sampled. A setting of 10 seconds is about right for a load of one ton or less, while a setting of 20 seconds is suitable for a load of 3 tons or larger. The objective is to get a sample which is representative. (9)

The sample discharge sprout should be fitted with a sliding gate or trap door at the bottom. This should be kept closed while the sample is accumulating in the pipe in order to avoid the loss of dust due to air draft. (10)

Pneumatic Sampler. The pneumatic or "suction" sampler, developed by C&MS, is in general use in the major peanut areas. If the applicant requests that we draw official inspection samples only with the pneumatic sampler at such locations, the Inspection Service will comply. (11)

One man can operate the sampler, but it requires his undivided attention while sampling. All samplers will be furnished with a sampling card showing the various sampling patterns to be used. Each pattern will be identified by a number. The sampling pattern (location where the tube is inserted) shall be varied from one load (12)

to another. The pattern number used shall be recorded on the sample ticket or rough notes for each load sampled. Five probes should be ample for the average farmers' stock load, but the number should be stepped up proportionately for loads of 7 tons or larger. See pages 36-37 for probe patterns and instruction for sampling larger size loads.

- (13) Some parts of the sampler are likely to be seriously damaged by inexperienced or careless operators. No one should operate it without having been thoroughly instructed and having learned the necessary precautions.
- (14) Pre-Sizer. The mechanical sheller created the need for a machine to separate the in-shell peanuts into three size groups. The pre-sizer makes it possible for the sheller to operate more efficiently. All samples should be run through the pre-sizer so that when shelled there will be less split kernels and less unshelled.
- (15) The cleaned, weighed sample which is to be shelled for grading is run through the pre-sizer. The peanuts are separated into three size groups, each suitable for one of the compartments in the sheller.
- (16) The accurate adjustment of the spacing devices on the pre-sizer is very important. Precise figures for these spacings have been worked out by J. W. Dickens, designer of the sheller. The Supervisor should have a gauge and check the spacing of the rollers occasionally.

Once the spacings are properly set, they shall not be changed without instructions from the supervisor. If the adjusting nuts on the sizer, should work loose, the gauge should be used to correct the spacings as the nuts are re-tightened. A lock nut is provided to prevent the roller from getting out of adjustment.

- (17) Sheller. The mechanical sheller has been tested, approved and adopted for use by the Inspection Service. All of the machines are basically alike except for the screen grids which are made with different size openings, depending upon the type of peanuts to be shelled. A specific screen grid is used for each of the three types - Runner, Spanish and Virginia. If more than one type of peanut is to be graded at a station, it is a simple matter to raise the shelling box, remove the grid and replace it with another.
- (18) The sheller has three separate shelling compartments. One is intended for the small peanuts, another for the medium size, and the third is

for the large size. The grid screen is made of three strips of perforated metal, each with perforations of a size to accommodate the peanuts in the compartment under which that portion of the grid is located.

The peanuts are transferred from the small bins under the pre-sizer to the appropriate compartments in the sheller. The largest size peanuts must be placed in the compartment intended for them - likewise the medium and small size peanuts must be placed in the right compartment. (19)

To facilitate this operation and prevent mistakes, the three bins under the pre-sizer are painted different colors, one red, one white and the other blue. The walls of each compartment in the sheller are painted with one of those colors corresponding to the color of the pre-sizer bin from which it receives its peanuts. With the bins and compartments painted in that fashion, it becomes almost a foolproof operation to dump the peanuts from the red bin into the red compartment and so forth. (20)

The automatic timer switch on the sheller should be set at a time slightly greater than the average time needed to shell a sample of the peanuts being graded. After running one or two samples, the desirable setting can easily be determined. Some samples may not be completely shelled within that time, and it may be necessary to run the sheller for a short additional time. (21)

Several precautions should be taken when operating the sheller as follows: (22)

1. Have the right grid screen in the sheller.
2. Put each sized portion of the sample into the proper compartment of the sheller.
3. Be sure that the sheller is completely cleaned out after each operation.

Mechanical Screen Shaker. The screen shaker will be used at all inspection stations, unless an exception is permitted by the Supervisor. Screens used in the shaker with 13 x 13 inch frames are generally made of 20-gauge metal. The screens for the 18 x 18 inch frames should be made of the heavier 18-gauge metal which is less inclined to vibrate excessively when the machine is in operation. The screen should be placed in the shaker in a position with the slots pointing in the direction of the thrust of the shaker, not at right angles to the thrust. (23)

- (24) All shakers are equipped with a timer switch. The duration of the shake should be 20 seconds for farmers' stock samples. When the shaker screen is of the 13 x 13 inch dimensions and the sample contains over 400 grams of shelled peanuts, the sample should be divided into two approximately equal portions and each screened separately for the full 20 seconds. This will avoid overloading the screen.
- (25) The shaker must be functioning properly to do an accurate job of screening. Correct alignment and slope are important and may need to be checked if the peanuts are not spreading fairly evenly over the screen. Excessive up-and-down vibration of the screen metal can cause excessive bouncing of the peanuts and should be corrected by bracing the under side of the screen or by some other means. If the screen is braced but still does not function properly, the machine needs adjustment.
- (26) Mechanical Kernel Splitter. The splitter will be used at all inspection stations, unless the Supervisor permits an exception. All samples having reasonably dry kernels should be well adapted to the splitter. However, if the peanuts in a sample are damp and the splitter cannot split them satisfactorily, the sample should be split by hand.
- (27) In operating the splitter, adjust the speed control to a moderate speed which will split a majority of the kernels but will not shatter them into small pieces. In order to do an accurate job of grading the splits, it is necessary to avoid shattering as much as possible. Some kernels are not split the first time through the splitter, probably because they strike the metal wall in the wrong position. Leaving the adjustment at the same moderate speed setting, take the kernels which failed to split and run them through the splitter again. Do not speed up the splitter simply to save time.
- (28) After running the unsplit kernels through once or twice at a moderate speed, the whole kernels remaining must be cut by hand.
- (29) The cloth sack attached to the splitter to catch the peanut skins picked up by the fan should be emptied at frequent intervals. Do not permit the bag to become more than one-fourth filled, because that lowers the effectiveness of the fan. The local supervisor shall check on this each time he visits the grading station.

Servicing Equipment. Each State supervisor should have at least one man with mechanical ability who is available at all times. This man should be familiar with the various machines being used, inspect them periodically and make adjustments and repairs as they are needed. (30)

GRADING ROOM REQUIREMENTS

The grading room, whether provided by the applicant or the Inspection Service, should meet certain requirements in order to facilitate the inspection work, eliminate unnecessary interference and increase accuracy. The major requirements are as follows: (31)

Size. Because of the space required for mechanical equipment a space at least 12 x 12 feet or the equivalent is needed for the grading area where one or two inspectors will be working. Proportionately larger spaces will be required at grading stations where more inspectors are employed. (32)

Floor. The floor should be as solid as it is possible to have. Masonry base floors are best, but a very solidly supported wood floor may be satisfactory. The mechanical screen shaker must have a solid floor in order to function properly, and the mechanical sheller will not do its best work on a shaky floor. The natural vibration of these machines is such that they cause a weak floor to shake and thus lower their efficiency. (33)

Privacy. The inspection room should be arranged with partitioning counters or railings so that persons not connected with the Inspection Service can be excluded from the area provided for grading. Growers whose peanuts are being graded should be permitted to watch the grading operation from outside the restricted area and to ask questions. They should not be permitted to enter the grading area or handle the peanuts in the sample. (34)

Ventilation and Heating. The grading room should have windows or doors to permit ample movement of air and ventilation during hot weather. It should also have provision for heating in cold weather. The inspector cannot do his work properly if the air is too hot or too cold or very dusty. (35)

Lighting. Bright light is essential to enable the inspector to see all defective peanuts. Fluorescent light (white) is considered best. The supervisor or key man should urge the buyer or applicant to replace unsatisfactory lights with a suitable fixture. A simple, (36)

inexpensive fixture such as an open reflector with 3 four-foot fluorescent bulbs will give good light. If this is not available, a 200 watt daylight (blue) bulb light with reflector serves as a poor substitute. The light should be suspended about 3 feet above the grading table.

- (37) Grading Table. The grading table or counter should be about 3-1/2 feet high and at least 3 feet wide to provide ample room for working the sample, as well as places for scales, screens and pans. The length of the table should be 5 or 6 feet where only one or two persons will be grading, and should be increased by about 2-1/2 or 3 feet for each additional grader over two who will be working at the grading station. Crowded quarters slow down grading operations and contribute to confusion and error.
- (38) Sample Divider. If possible, the sample divider should be placed outside of the grading room, either in an adjoining room or out-of-doors, but as close to the grading areas as possible. This will help to reduce the amount of dust in the air of the grading room. If it is necessary to place the divider inside the grading room, a window fan near the divider which can be turned on when peanut samples are being cut down in the divider is very effective for blowing the dusty air out.
- (39) Sample Storage Room. A small room, closet or large cupboard adjacent to the grading area may be used for storing check samples. If the buyer wishes to make provision for later inspection of the check samples, the room or cupboard must be fitted with an adequate lock and the keys turned over to the inspector in charge of the station. Furnishing of such a storage space is not required of the buyer, but he should know that any samples not stored in such a secure place overnight will not be used for a regrade the following morning.

SAMPLING BULK PEANUTS

- (40) Use Mechanical Samplers. All loads of bulk peanuts shall be sampled for inspection purposes by mechanical sampler, either the pneumatic or the spout type. The only exception to this rule will be made with special permission of the supervisor as an emergency measure. Years of experience with other methods have convinced us that the manual methods of sampling formerly in use are less accurate and are unsatisfactory.

Compositing Samples. Under certain conditions, it may be advantageous (41) to the producer, the buyer and the Inspection Service to combine the samples from two or more small loads of farmers' stock peanuts and run one grade analysis to cover the two or more loads. This procedure may be used by the inspector if it is acceptable to the producer and the buyer, but only under the circumstances listed as follows:

1. Loads on straight trucks, pickups, small trailers or loads from dryers arriving to be sampled at approximately the same time. They must not be unloaded by the buyer until the grade has been determined.
2. The loads are represented to come from the same producer, and the general appearance of the loads is closely similar. If there are marked differences in the appearance or condition of the peanuts in one load is compared to another, the inspector must grade the loads separately.
3. The combined weights of the peanuts in the loads to be graded together does not exceed approximately 20,000 lbs.

Loads to be graded together on the basis of a combined sample should (42) be sampled together at about the same time and at the same rate in proportion to the load size. For example, if a truck contained about two tons and a trailer behind it contained about one ton, draw about twice as much sample from the larger load. Mix the two samples, and reduce to the desired amount for analysis. If the applicant requests it, each load should be sampled and inspected separately.

Artificial Dryer Samples. When peanuts are removed from a dryer, (43) they may be sampled immediately for grading. In some cases, they may be warmer than the air temperature at the time of sampling, and they could show a slight change in kernel size and moisture content when the temperature drops to that of the air. It is recommended that analysis of the sample be delayed until cooling is complete. However, the sample shall be analyzed while still warm if the applicant requests it.

SAMPLING SACKED PEANUTS

Number Sacks Sampled. In the Southwest and the Virginia-Carolina (44) areas, some peanuts are marketed in sacks. Samples should be drawn from at least one-tenth of the sacks in medium to large sized loads, but the ratio should be increased for small lots. For example, 2 or 3 should be sampled in a lot of five; 4 or 5 sampled out of 25; 6 or

7 sampled out of 50; 10 or more sampled out of 100; and not less than 10% of sacks in larger loads. The total sample should consist of from 7 to 10 pounds of peanuts, depending on the size of the load. In larger loads, it will be satisfactory to draw smaller quantities from each of the sacks sampled than is the case with small loads.

- (45) Making Load Accessible. When sacked peanuts are stacked on a truck or in a warehouse, it will be the owner's responsibility to make the lot accessible for inspection by moving as many sacks as the inspector considers necessary. The inspector must draw samples from the middle and bottom, as well as the top and sides of the load, to insure obtaining a fair cross section samples.
- (46) Cutting Sacks. Samples should be drawn from the tops, sides and bottoms of sacks, with emphasis on the sides and bottoms, in order to obtain a representative sample. To sample at the side or bottom of a sack, it is necessary to cut the sacks. Inspectors must use consideration in cutting sacks, so as to avoid needless mutilation of sacks and waste of peanuts. Cuts should be made along the side or bottom seam and the sack then placed so the peanuts cannot spill out after sampling.
- (47) Horn Sampling. The "horn" or scoop is used in sampling from sacks. When sampling from the side of a sack, set the sack up if possible and cut the seam near the bottom for a distance of 10 to 12 inches. Work the horn into the peanuts and then work one hand into the peanuts above the horn. Remove the horn and the hand together, bringing out the peanuts and the foreign material in a pincers-like device. When sampling from the bottom of a sack, have the sack lying on its side and cut the bottom seam, so that the horn may be inserted horizontally. When sampling from sacks in the bottom of the load, it may be impractical to try to lift the sacks. If that is the case, the inspector should cut the sack as near the under side as possible, in order to obtain some of the loose dirt.

SAMPLE MAN

- (48) We must obtain a representative sample if we are to determine accurately the grade of the lot. Consequently, every effort should be made to draw the best sample possible.
- (49) Training and Licensing. Experience has shown that in most cases men who have been trained and licensed as inspectors do a better job of sampling than unlicensed men. This is because the licensed inspector

usually has a greater interest and sense of responsibility. Sampling, as well as grading, should be done by fully trained and licensed inspectors in every case except in emergencies or where circumstances make it impracticable.

Supervision of Sampler. Where a non-licensed sampler is employed it (50)
is the duty of the inspector-in-charge to instruct him in the approved sampling procedure and to supervise his work. There is a natural tendency to cut corners in order to lighten the burden of the sampling work. The inspector should be alert to prevent the sampler from using unauthorized short-cut methods.

MIXING AND DIVIDING SAMPLE

Mechanical Divider. Tests have shown that this device does the job (51)
faster and more accurately than can be done by hand. The procedure is described as follows:

Spread Sample in Pan. The sample is poured from the sample container (52)
into one of the long metal pans supplied with the divider. It should be poured gradually while moving the container back and forth along the length of the metal pan. This assures a fairly uniform distribution of foreign material throughout the sample, rather than having it concentrated in one small section of the pan.

Run Through Divider. The peanuts are poured, not dumped, from the (53)
pan into the top of the divider. This gradual pouring from a height of 3 to 5 inches above the divider makes the sample flow freely with little or no clogging in the slots of the divider. When the sample has passed through, any pieces of hay which have lodged on top or peanuts which have lodged in the slots should be knocked loose with the hand and permitted to fall through without regard to which way they fall. One division may be sufficient in some cases where the total sample is small and a good sized sample is to be used for foreign material determinations. However, in most cases, more divisions will be necessary to reduce the size of the sample to the amount needed for analysis.

Reverse Divider Pan. The sample divider may contain a slight bias (54)
due to lack of uniformity of the slots. In order to counteract this, the inspector should reverse the ends of the divider pan before making the second cut. That is, he should turn the pan so that the left and right ends change places. The pan should be reversed again before each additional cut.

- (55) Reducing Sample. The inspector must plan his dividing in such a way that, when he stops dividing the sample, he will have a quantity of precisely the amount or somewhat more than is required for foreign material determination. If one division too many is made, and he ends up with less weight in the sample than is required, then he must recombine the whole sample and repeat the dividing procedure with one less cut. Never build up the size of a sample which has been divided too many times. If, after dividing the sample one or more times, the quantity in one divider pan is much too large for the sample needed, yet not enough to stand another cut, the procedure to use is as follows: (1) Set one half of the sample aside; (2) Cut the other half of the sample once; (3) Add one half of this cut to the portion set aside; (4) Cut the combined portions and obtain in one divider pan a quantity near the amount needed.

WEIGHING FOREIGN MATERIAL SAMPLE

- (56) The Entire Last Cut Method, or "Computer Method," shall be used in determining the percentage of LSK's and foreign material. This method requires weighing all of the sample obtained from one divider pan when the last cut has been made. In other words, after the sample size has been reduced by dividing to the amount needed for analysis, approximately 1,800 grams, the whole amount is weighed.
- (57) 1,500 Gram Minimum. The inspector should aim for a sample of about 1,800 grams but should never use less than 1,500 grams. Therefore, it is important that the dividing operation be planned carefully so as to arrive at an amount close to the desired 1,800 grams.
- (58) Percentage Computer. The use of a percentage computer is essential when analyzing the random weight samples from the last cut. In calculating the percentages of the various grade factors, it is necessary to divide by large uneven numbers of grams representing the sample weight such as 1,785; 1,858; 1,647; or 1,776.

FOREIGN MATERIAL

- (59) Definitions. Foreign material includes everything, other than peanuts, which is found in farmers' stock. The items commonly found are dirt, hay (vines), sticks, stones, insects, broken shells which contain no peanut kernels, raisins, etc.
- (60) Vines or "hay" are parts of the peanut plant other than the thread-like stem or "tail" of the individual nut. When a piece of vine is attached to the stem, the vine shall be detached and placed with

the foreign material. The stem is considered as part of the peanut.

"Raisins" or "twisters" are extremely immature, undeveloped peanuts (61) with badly shriveled and shrunken shells. They shall be classed as foreign material. Raisins are scored on the basis of appearance only (see photograph) and shall not be pinched or opened to determine the extent to which the kernels have developed inside. Because of the shrunken, tough shells, raisins cannot be shelled by the machinery, even if they contain a partly developed kernel, and they create a difficult problem for their removal in the milling operation.

Large Pieces of Foreign Material. If large stones, dirt clods or (62) other large foreign materials appear in the sample being run through the divider, steps should be taken to insure that a proportionate part of the material is charged to the analysis sample. This can be accomplished in many cases by breaking clods of dirt or pieces of hay or sticks into small pieces to permit even distribution when the sample is cut down. If the large pieces of foreign material are too hard in texture to break, the inspector should follow this procedure:

1. Weigh the large piece or pieces of foreign material and record the weight temporarily.
2. Divide the total sample as many times as necessary to reduce it to the approximate size to be analyzed, keeping count of the number of times the sample is divided.
3. Divide the foreign material weight determined above by a figure depending upon how many times the sample was divided, as follows:
 - 2 - if the sample was divided once
 - 4 - if the sample was divided twice
 - 8 - if the sample was divided three times
 - 16 - if the sample was divided four times
4. The figure obtained is the proportionate weight of foreign material which should be added to the weight of foreign material segregated from the sample analyzed.
5. The weight of foreign material obtained by adding the two figures is divided by the weight of the sample analyzed, and the resulting figure is the percentage of foreign material to

be reported for the load or lot.

- (63) Unusual Foreign Material. If a piece of very unusual substance such as nut, bolt, or other piece of machinery is found in the sample, the inspector should make an effort to determine whether more of the substance is present in the load. If it is believed that no more substance of this nature is present, the one piece found in the sample should be discarded. However, if an appreciable amount is found, it should be handled as is described in the example for large pieces of foreign material.
- (64) Running Entire Sample for Foreign Material. Some loads may contain unusual amounts of foreign material, making it desirable to run the entire sample. In this case, its percentage is determined by dividing the weight of foreign material by total weight of the entire sample. The usual size sample shall be run to determine the remaining grade factors.

LOOSE SHELLLED KERNELS

- (65) The percentage of loose shelled kernels in every sample will be determined and recorded on the inspection certificate. The name "loose shelled kernels" has been given to peanut kernels or portions of kernels completely free from hulls and scattered in farmers' stock peanuts. They are undesirable, since kernels generally keep better if they are inside of good, sound hulls. In the milling operation, the L.S.K. are usually removed and put into the oilstock.
- (66) Method of Determining L.S.K. The sample used for foreign material determination shall also be used for determining the percentage of L.S.K. (loose shelled kernels). As the sample is cleaned, the foreign material will be put in one place, and the L.S.K.'s in another. Small pieces of kernels should be included and placed with the others. All L.S.K.'s are weighed in each lot, regardless of quality or size.
- (67) Calculating Percentage. The percentage is calculated on the basis of the original weight of the foreign material sample.

TWO SEPARATE CALCULATIONS

- (68) The percentages of both foreign material and loose shelled kernels are based upon the same sample. The percentages of kernels inside the shells and percentage of "fancy size" are based upon a

different and smaller size sample. The two determinations and calculations must be completely separate. (See Inspection Procedure, Par. 115)

GRADING THE CLEANED SAMPLE

A portion of the cleaned sample, usually 500 grams, is analyzed to determine the percentages of kernels of various classes. For Virginia type, we also determine the percentage of "fancy size" peanuts. The steps and procedures involved in this analysis are covered briefly in paragraph 115. Some of the steps, however, are discussed in some detail below. (For size of analysis sample, see table in par. 115). (69)

Screening. Checking Screen Opening Size. The size of openings in screens used is very important, as the price varies directly with the percentage of "sound mature kernels". The inspector should check the size openings of the screens he will use and mark the frames to avoid using the wrong screen. Our Federal Supervisors and some District Supervisors have sizing gauges for checking screens. (70)

Kernel Screening. All farmers stock grading stations are equipped with mechanical screen shakers. These machines eliminate most of the human variation from the screening operation. However, it is very important that the shaker be properly adjusted as pointed out in Par. 25. If the shaker is not properly adjusted, the screening should be done by hand until the shaker can be corrected. (71)

Hand screening must be authorized by a supervisor. In such case, the following procedure shall be used: Shake the screen from side to side with a slight tilting motion to keep the peanuts moving over the openings. Stop the motion at frequent intervals to permit kernels which are over the openings to drop through. If large numbers of kernels lodge in the openings, a slight up-and-down motion may help to free some of them. Do not bump the screen on a hard surface, as that tends to force kernels through the openings when they should not go through. When no more peanuts will pass through the screen, the operation is finished. (72)

In-Shell Virginia Type Sizing. All Virginia type lots shall be sized to determine the percentage of "fancy size", but shall be reported as Virginia type on the certificate, regardless of the percentage of "fancy size" peanuts in the lot. However, there are (73)

two levels of price support for Virginias, depending upon whether the lot contains less than 40 percent "fancy size" or contains 40 percent or more "fancy size".

- (74) The percentage of "fancy size" shall be determined by the pre-sizer with spacing set at $34/64$ inch. Weigh the smallest size peanuts separated out by the pre-sizer (blue pan), determine the percentage of this portion of the sample, and subtract that percentage from 100. This will give the percentage of "fancy size". In case the sample shows 37 to 39 percent "fancy size", another equal size portion of the cleaned sample should be sized in the same way. The results of the two size determinations are then averaged to provide a more reliable basis for reporting the percentage of "fancy size".
- (75) Reporting Fancy Size. Enter the percentage of "fancy size" on the certificate in the space provided. When a sample contains less than 40 percent "fancy size" peanuts, this fact shall be emphasized on the certificate by making a circle around the percentage. Also make a statement under "Remarks" as follows: "Fails 40% Fancy". This will help the person who prices the load to determine which price level to use as the base. Be very careful not to make a ring around the percentage of "fancy size" if it is 40 percent or more.
- (76) Classifying Kernels. The grade factors which must be determined on the basis of the kernels are the percentages of "sound mature kernels", "sound splits", "damaged kernels", and "other kernels". In addition, when grading Virginia type, the percentage of "extra large" kernels must be determined. These classes of kernels are defined below, and the procedure for determining the percentage of each is given under "Inspection Procedure" in Par. 115.
- (77) Sound Mature Kernels. (S.M.K.) are the whole kernels which ride the screen officially designated for the type. The size openings designated for each type of peanuts are: Runner - $16/64$ inch diameter slots; Spanish - $15/64$ inch diameter slots; Virginia containing 40% or more fancy size - $15/64$ inch diameter slots; Virginia containing less than 40% fancy size - $16/64$ inch diameter slots. Splits which ride any of the screens shall be put with the splits, either sound or damaged, as the case may be.
- (78) Sound Splits (S.S.) are the split or broken kernels which are not damaged. It is assumed that such undamaged kernels were probably broken by the sample sheller. Portions less than $1/4$ of a whole kernel shall not be included, but shall be left with the O. K.

Damaged Kernels (D.K.) in farmers' stock are the defective kernels which ride the screen and the defective splits as follows: (79)

Rancid, decayed or moldy;
Having sprouts more than 1/8 inch long;
Affected by insects, worm cuts, web or frass;
Distinctly dirty, with appearance materially affected;
Affected by flesh discoloration darker than light yellow, or more than slight yellow pitting of the flesh;
Affected by skin discoloration which is dark brown, dark purple, dark gray, dark blue or black and which covers more than 25% of the surface; or
Affected by freezing, causing hard, translucent or discolored flesh.

Concealed R.M.D. applies to a kernel affected by rancidity, mold or decay which was not apparent by external examination. Such concealed damage is found only when the peanut kernels are split, and in all probability it could not be found in the milling operation. The requirements of the Marketing Agreement make it necessary that we determine and report on the certificate the percentage of concealed R.M.D. in the sample, even though the percentage may be zero. Do not include kernels in this class which are scored only for concealed internal flesh discoloration. Examples: "Concealed R.M.D. 0.00%" or "Concealed R.M.D. 0.75%" or "Concealed R.M.D. 1.35%". (80)

Reporting Damage. After the heading "Damage" on the certificate, report the total percentage of damage rounded to the nearest whole number. In some areas the buyer wants the visible and concealed damage shown separately. In this case, record the approximate proportion of visible first, then the approximate proportion of concealed, and then the total. Examples: "1+1 = 2" or "1+0 + 1". (81)

Other Kernels (O. K.) are the kernels which pass through the screens to separate them from the sound mature kernels. All whole kernels passing through the prescribed screens are included, whether they be sound or defective. Splits and broken pieces one-fourth kernel or larger which have passed through the screen with the whole kernels are picked out and placed with the sound splits or with the damaged kernels, depending upon their condition. Portions less than 1/4 of a whole kernel shall not be included, but shall be left with the "other kernels". (82)

- (83) Extra Large Kernels (E.L.K.) are a grade factor for Virginia type peanuts only. They are a part of the S.M.K. which are separated from the rest by the 21.5/64 x 1 inch screen on which they ride. Determine and report percentage of ELK on all lots regardless of percentage of fancy size.
- (84) Hulls are saved as one means of checking the accuracy of the grade. They should be sorted to salvage any kernels which may remain among them from the shelling machine. They should then be weighed to determine whether practically all of the sample weight has been accounted for.
- (85) Weighing Graded Material. After the sorting and grading of the kernels is completed, the various categories are weighed. The inspector should immediately add the weights of all classes of kernels and the hulls to ascertain that he has accounted for practically all of the 500 grams or whatever amount was contained in the cleaned analysis sample.
- (86) Adjusting Percentages. The various percentages determined will not always add up to 100 percent. If the total is not more than 1 percent below or above 100 percent, the grade may be considered accurate. In this case, the total percentage may be reported as 99 percent or 101 percent. If the applicant prefers percentages adjusted to 100, the inspector may add 1 percent or subtract 1 percent from the hulls to bring the total to exactly 100%. However, if the total of all percentages found is 2 percent or more below or above 100 percent, such an adjustment shall not be made. Carefully re-weigh each item to see if a mistake was made in any of the percentages which accounts for variation. If the error cannot be found, discard the results of that grading, and analyze another portion of the sample. Never report a grade on the basis of an analysis totaling 2 percent or more variation from 100.
- (87) Reporting Percentages. After weighing the grade factors and determining the percentages, each of the percentages excepting that of concealed R.M.D. shall be rounded off to the nearest whole number. That whole number is reported on the certificate. (R.M.D. will be reported to the exact decimal place as found). Drop back if there is less than a half - go up if there is a half or more.
- Examples: 1.49% - report 1%
1.50% - report 2%
0.49% or less - report 0%

MOISTURE TEST

Moisture content is an important factor of Peanut quality. (88)

Moisture Sample. A portion of the kernels used for grade analysis should be used for the moisture test. The sample should include a mixture of all classes of peanuts (S.M.K., O.K. AND D.K.) in approximately the same proportions in which they are present. All foreign material shall be removed from the test sample. (89)

Warm up Tester. The instrument switch should be turned on about 5 minutes before the test is made. The tester does not function properly until the tubes have warmed up. Leave the tester switch on for as long as tests are likely to be made, but turn it off when the instrument will not be used for an hour or more. (90)

Weighing Sample. A very precise weight is essential for an accurate moisture reading. Be sure that the scales balance accurately at all times. Weigh the quantity needed for the test very carefully and obtain a perfect balance. Moisture testing instruments are calibrated on the basis of samples weighed in grams. In case it is necessary to weigh samples on scales calibrated in ounces and percentages, the following table will be helpful: (91)

| Scale Beam Capacity | Size Sample Required (grams) | | |
|---------------------|------------------------------|-----------|------|
| | 250 | 100 | 75 |
| | Set Slide | Weight At | |
| 4 ounce | | 88% | 66% |
| 8 ounce | | 44 | 33 |
| 1 pound | 55.1% | 22 | 16.5 |

Temperature. It is necessary to take the peanut temperature in order to make any necessary corrections in the readings. Most instruments have a built-in thermometer. It is important to allow the peanuts to remain in contact with the thermometer for at least 30 seconds before the reading is taken. If the instrument does not have a built-in thermometer, temperature shall be taken with a laboratory thermometer, preferably before testing. (92)

Testing Procedure. The sample is weighed and poured into the funnel. The peanuts are leveled in the funnel with a pencil. The instrument is balanced by adjusting the balance knob if necessary. The sample is dropped into the testing cell by releasing the catch on the trap door. The instrument reading is taken. The lower gate is opened, (93)

releasing the peanuts into the drawer for removal. The temperature is recorded after a brief wait. The moisture content is found on the chart opposite the reading taken from the instrument. The temperature correction, if any, is applied to the moisture figure. Finally, the corrected moisture content is rounded off to the nearest whole number and entered on the certificate.

- (94) Second Moisture Tests. If the moisture content determined from the reading seems to be questionable because it is unusually high or unusually low, or for any other reason, a second reading should be taken. Remove the sample from the bottom of the tester, re-weigh it and repeat the testing procedure. If the two meter readings are within one or two dial points of one another, they shall be averaged and the average figure used as the basis for determining the moisture content. If the two readings are several points or more apart, a third, and possibly a fourth reading shall be made, in order to obtain an average reading which is truly representative of the sample. If one reading is far off and out of line from the other two or three, it may be assumed that there has been an error in operation or an error in reading the needle, and that particular reading should be omitted in getting the average.

- (95) Converting Reading to Moisture. The moisture content value may be obtained from the conversion table. Always bear in mind that there are different conversion tables or "charts" for each of the three major types of shelled peanuts, Spanish, Runner and Virginia. The moistures for Valencias may be determined from the Runner Chart, since the two varieties are similar in kernel size. There are also different charts for the different models of Steinlite which are in the field: "D", "G", 500PT and PT-2. Be sure to use the right chart for the instrument you are using and the type of peanuts you are testing. Find the moisture percentage on the chart which fits the particular reading obtained on the particular button. Make temperature correction, if necessary, as shown in the following:

Example: 1. Spanish Reading (75 gms.) A-53, Temperature 85°F
Moisture indicated on Steinlite chart (model G) 7.86%
Correction for temperature, 85° to 80° (-5 times
.04)

$\begin{array}{r} -.20 \\ 7.86\% \\ \hline 7.66\% \end{array}$

2. Spanish Reading (75 gms.) A-57, Temperature 71°F
Moisture indicated on Steinlite chart (model G) 8.36%
Correction for temperature, 71° to 80° (9° times
.04)

$\begin{array}{r} +.36 \\ 8.36\% \\ \hline 8.72\% \end{array}$

Reporting Moisture on Certificate. Moisture content determined by the electric meter is approximate and the percentage reported should be rounded off to the nearest whole number after the temperature correction has been made. (96)

| | | |
|----------|-------------------------|------------------------------|
| Example: | Corrected | |
| | <u>Moisture Reading</u> | <u>Report on Certificate</u> |
| | 6.25% | 6.00% |
| | 6.49% | 6.00% |
| | 6.50% | 7.00% |
| | 6.75% | 7.00% |
| | 8.49% | 8.00% |
| | 9.50% | 10.00% |

Care of Moisture Meters. Electronic moisture meters contain compensatory parts which are designed to prevent errors and make the readings accurate. However, if at any time one of the instruments seems to be acting abnormally or failing to operate, the supervising inspector should be notified immediately and steps taken to have the instrument checked or replaced. The supervisor shall make occasional checks on the instruments to try to determine whether they are in line. They contain radio-type tubes, and although they may be transported as needed, care should be taken to avoid dropping them or damaging them in any way. (97)

MIXED TYPES

The standards for shelled and cleaned peanuts require that they be of one type. Therefore, a mixture of two types of peanuts in farmers' stock is objectionable. If kernels are noted which are very definitely of another type from the majority of the lot (Example: Runner type mixed with Spanish type) such kernels shall be picked out of the S.M.K. to determine the amount of mixture. If more than one-half of 1% of them are present, weigh them, determine the percentage on the basis of the shelling sample weight, and report the percentage in the "Remarks" space. Example: "Load contains 2% Runner". It is understood that this percentage is included in the percentage reported for S.M.K. Save the kernels scored as "other type" in a separate sack or envelope, and have the district supervisor check them to make sure that the scoring is right. (98)

When types are mixed, the grade and moisture determinations shall be made in the usual manner. The determinations shall be based on the requirements for the type making up the larger portion of the sample. For example; Lot consisting mostly of Spanish type, base (99)

all determination for both grade and moisture on instructions given for Spanish type.

SAMPLE SUBMITTED BY GROWER OR BUYER

- (100) A sample of peanuts may be brought to the inspector with a request that he grade it as a matter of information. The inspector should grade the sample if it does not interfere with inspections of incoming loads, or he may hold it until he finds time to grade it. The memorandum should show that the inspection covers the sample only, and under "Remarks" a statement similar to the following: "Sample submitted by (Name)." Fees for such inspection should be fixed by the individual State.

REGRADE POLICY

- (101) Regrade for Quality. Any financially interested party is entitled to request a second inspection on a load of peanuts. The inspector should make such an inspection when the request is reasonable. The load or lot must retain its unquestionable identity to be subject to a regrade or an appeal inspection.
- (102) When Lot is Available. If the lot is available, it shall be resampled and graded in the usual manner. The inspector should suggest that the dissatisfied person accompany him to the truck and observe the drawing of the sample. If the pneumatic sampler is used, the probe pattern should be varied from the previous pattern. Select a pattern that would prevent duplicating probes from the first sampling. This should promote better understanding and increase confidence in the Inspection Service.
- (103) When lot is not available. If the lot has been put into the warehouse with other peanuts and cannot be identified for resampling when the second inspection is requested, an inspection may be made on the check sample which has been held. Such an inspection should not be made unless the inspector is certain that the sample in question has not been changed or altered in any way. In many cases, there are no facilities for locking up the sample at night, and the inspector has no control over them. Under such conditions, a second inspection should be refused if requested at any time after the inspection point has been closed for the night of the day when the first inspection was made.

Averaging for Results. In most cases the percentage determined for each grade factor from the first and second inspections should be averaged and the average grade reported on the certificate. However, if there is a wide difference between any of the percentages in the first and second inspection results, a third sample should be drawn and graded and the average of all three samples used as the grade reported on the certificate. If there is clear evidence that a mechanical error in grading has been made or that a sample from another load has been used by mistake, the grade on that particular sample should be discarded and the grade of the other sample or average of the two other samples shall be reported. (104)

Regrade for Moisture. When a regrade is requested for moisture content, the load should be resampled. The moisture percentages from the first and second samples should be averaged and reported on the certificate unless the percentages are widely different. In case they are widely different, a third sample should be drawn, and the average of the two percentages closest together reported on the certificate. (105)

Limited Second Inspection. When making a second or third sample analysis, it is not necessary to repeat the moisture test, if only the grade is in question. By the same token, it is not necessary to make a grade analysis when only moisture content is in question. (106)

Partly Unloaded Trucks. If it is apparent that the remaining portion of a load on a partly unloaded truck is of decidedly different quality than is indicated by the grade for the load, the warehouseman or buyer should stop the unloading. The truck with the remainder of the load should be weighed and the certificate will then be held to apply only to that portion of the load already unloaded. The inspector shall sample and grade the remaining portion of the load, issuing another certificate as covering a separate lot. (107)

Appeal Inspection. An appeal inspection may be requested by any financially interested party who believes the inspector has graded the sample incorrectly because of wrong interpretation of the grade specifications. The load in question, if still available, shall be held aside. The District Supervisor or Federal Supervisor shall be called and requested to make the inspection. He shall draw a new sample, seeing to it that the load is carefully and thoroughly sampled, and he shall grade the sample. (108)

- (109) The grade determined by the supervisor will be the official grade for the load, and it will supersede that previously reported by the inspector. However, if the supervisor's grade has a wide variance from that reported earlier by the inspector and the differences cannot be accounted for on the basis of interpretation, the supervisor may draw and analyze another sample, averaging the results of his two grades to be reported as the result of the appeal inspection.

THE CERTIFICATE

- (110) Kind Used. Inspections of Farmers' Stock Peanuts are reported on a certificate (MQ-94) especially designed for this purpose. One half of the form has space for the inspection report and inspector's signature, and the other half has space for information required by the buyer or price support program. The certificates are made with all copies bound together and carbon paper between them. Each certificate and its copies bear an individual number for identification.
- (111) Accounting for Certificates. The certificate is an official Government document and is entitled to the respect and care of the Inspection Service as well as the users of the service. The inspector must avoid losing the certificates or allowing them to be used by unauthorized persons. He should see to it that they are in a safe place or take them with him when the inspection station is closed. He must account for every certificate. When one is voided because of a mistake or incorrect information, it shall be marked "VOID" in large letters diagonally across its face and it shall be kept in its proper place with the copies of issued certificates, all of which are eventually turned over to the supervisor. At the ends of the deal or when the individual inspection station is closed, the inspector must turn over all unused certificates to the supervisor and must under no circumstances leave them at the premises of the applicant.
- (112) Distribution of Copies. The certificate copies are made of papers of different colors arranged in a definite order. This helps in distributing the various copies in a uniform manner. The pattern of distribution will vary with circumstances, and the supervisor should advise the inspector on how to distribute the completed certificates at the station in question.

DAILY TABULATION SHEET

The tabulation or listing sheet is a form designed to provide a condensed summary of all inspection reports. It provides very useful information for the buyer and the central inspection office. It is also used as the basis for statistical analyses of the quality of the entire crop by the agency charged with administering the price support program. (113)

The inspector will list the results of each day's inspection on the sheets and send them to the supervisor's office. Detailed instructions will be given him as to how to fill out the forms and how to distribute the copies. (114)

INSPECTION PROCEDURE BY STEPS

The following is a list of steps to be taken in the inspection and grading of a load of farmers' stock peanuts. This is in condensed form, and more detailed information on most of these steps can be found in other parts of the handbook. (115)

1. Draw sample from load. (Par. 40-47)
2. Mix and reduce size of sample. (Par. 51-55)
3. Weigh sample for determining percentage of foreign material and percentage of L.S.K. The recommended quantities to be used for both stages of the analysis are listed in the following table. (See pars. 56,57,58 and 69).

SIZE SAMPLE FOR GRADE ANALYSIS

| Size of Load | Size Sample Analyzed | |
|--|-----------------------|---|
| 10 Tons or Less | <u>KERNEL CONTENT</u> | <u>FOREIGN MATERIAL</u> |
| | 500 Grams | |
| Single Loads of Over 10 Tons (For combining loads See Par. 41). | 1,000 Grams | Aim for 1,800 grams but never use less than 1,500 grams. |

4. Screen and sort sample to remove all foreign material and all loose shelled kernels. Put back any small in-shell peanuts which have passed through the F.M. screen, but which are not raisins, and place them with the in-shell peanuts riding the screen.
5. Weigh foreign material, and record percentage.
6. Weigh loose shelled kernels, and record percentage.
7. Weigh a representative portion of the cleaned sample for kernel content analysis. The quantity used should be as indicated in the preceding table.
8. (Virginia type only). Separate the "fancy size" in-shell peanuts from the others by pre-sizer according to instructions in Pars. 74 and 75. Weigh and record percentage.
9. Pre-size and shell the sample, being careful to remove all peanuts and hulls from the machines. The mechanical sheller and pre-sizer are to be used for all official inspections unless an emergency exception is permitted by the supervisor.
10. Collect all hulls. Spread them and examine them to recover kernels which may have been left in them. Weigh and record percentage of hulls.
11. Determine the moisture content of the kernels, following the procedure described in paragraphs under the heading "Moisture Test". (Pars. 89 - 96).
12. Screen the kernels obtained in shelling the sample. Set the timer at 20 seconds and allow the mechanical shaker to screen the peanuts for the full 20 second period. Size of screen openings used shall be:

| | |
|--|--|
| <u>Runner:</u> | 16/64 inch diameter slots. |
| <u>Spanish and Valencia:</u> | 15/64 inch diameter slots. |
| <u>Virginia</u> (with 40% or more "fancy size"): | 21.5/64 inch diameter slots (upper) 15/64 inch diameter slots (lower) |
| <u>Virginia</u> (with less than 40% "fancy size"): | 21.5/64 inch diameter slots (upper) 16/64 inch diameter slots (lower) |

RUNNER, SPANISH AND VALENCIA TYPES
(For Virginia type, see 13-V to 17-V below)

13. Weigh the kernels which rode the screen and record the weight on the rough note sheet in the space provided for "Total Kernels Riding Screen".
14. Examine the peanuts which rode the screen to find and remove damage. First pick out any visible damaged kernels. Then find and pick out the concealed damaged kernels by running the peanuts through the kernel splitter and examining the inside of each kernel. (See "Damaged Kernels", Pars. 79-81 and "Kernel Splitter", Pars. 26 - 28).
15. Weigh all the damaged kernels found in the kernels riding the screen and record the weight on the rough note sheet in the space marked "Damage" following "Total Kernels Riding-----".
16. Subtract the weight of the damaged kernels which rode the screen from the weight of all of the kernels which rode the screen to obtain the weight of the "Sound Kernels Riding" the screen. Determine and record the percentage of these sound kernels.
17. Pick out the split or broken ($1/4$ kernel or larger) from the kernels which passed through the screen. Separate them into two classes:
 - (1) The clean, undamaged split or broken, and
 - (2) The dirty or otherwise damaged split or broken.
18. Weigh the undamaged split or broken, determine the percentage, and record the percentage as "Sound Splits" in the space provided.
19. Add together the percentage of Sound Kernels riding the screen (step 16 above) and the percentage of Sound Splits (step 18 above) to obtain the total percentage of "Sound Mature Kernels" and record in the space provided.
20. Weigh the whole kernels and pieces less than $1/4$ th of a kernel which passed through the screen, determine the percentage, and record the percentage as "Other Kernels" in the space provided.

21. Weigh the dirty or otherwise damaged split or broken, and add their weight to the weight of the damaged kernels which rode the screen (step 15 above). Determine the percentage of this combined weight and record the percentage as "Damage" in the space provided.
22. Check the accuracy of analysis and weighing by adding together the percentages to be sure that the total is approximately 100%. Add the S.M.K., O.K., Damage and Hull percentages.

VIRGINIA TYPE

- 13-V Weigh the kernels riding the upper screen and record the weight on the rough note sheet in the space provided for "Total ELK (Extra Large Kernels) Riding _____". Then weigh the kernels riding the lower screen. Keep the two sizes of kernel separate, but add the weights of the two and record the total weight on the rough note sheet in the space provided for "Total Kernels Riding Screen".
- 14-V Examine each of the two size lots separately for damaged kernels, first removing the visible damaged kernels, then running the rest through the kernel splitter and removing the concealed damaged kernels. (See "Damaged Kernels", Par. 87 and "Kernel Splitter" Pars. 26 - 28).
- 15-V Weigh the visible and concealed damaged kernels removed from the "Extra Large Kernels" and record the weight on the rough note sheet in the space for "Damage" following "Total ELK Riding ---". Subtract the damage weight from the total ELK Riding weight and record the remaining weight in the space provided for "ELK". Most shellers request that we show the percentage of visible damage and concealed damage as well as the total percentage of damage.
- 16-V Place together all visible and concealed damage from the kernels riding both screens and weigh. Record weight on rough note sheet in space provided for "Damage" after "Total Kernels Riding Screen". Subtract damage from Total Kernels Riding to get and record the weight of Sound Mature Kernels in space provided for "SMK".

17-V Follow procedures described in steps 17 to 22 above for Runner and Spanish types. Passing through the screen in the case of Virginia type means the kernels which passed through the screen with the smaller openings.

RETAINING CHECK SAMPLE

(116) A portion of the sample approximately equal in size to the portion used for grade analysis shall be saved as a "check sample." Place it in a paper sack or other suitable container marked for identification, and place a copy of the certificate or work sheet in with the sample. These samples are to be retained at the grading station until collected by the district supervisor, or until he authorizes their release.

PART II

SPECIAL INSTRUCTIONS REQUIRED BY THE PEANUT MARKETING AGREEMENT AND
THE PRICE SUPPORT PROGRAM

- (117) The following instructions and definitions are intended to supplement those contained in Part I of this handbook, with particular reference to the Peanut Marketing Agreement and the Price Support Program.

FARMERS' STOCK QUALITY REGULATIONS

- (118) Under the provisions of the Marketing Agreement, shellers who sign the agreement may purchase only Seg. 1 peanuts for edible purposes. The Marketing Agreement Administrative Committee and the Peanut Price Support Program people jointly have established quality regulations as follows:
- (119) Segregation 1. Shall include all farmers' stock peanuts with:
- A. Not more than 2.49% damage (rounded to nearest whole number),
 - B. including not more than 1.00% concealed damage caused by rancidity, mold or decay.
 - C. No visible A. flavus mold.
- (120) Segregation 2. Shall include all farmers' stock peanuts with:
- A. 2.50% or more damaged kernels (rounded to nearest whole number),
 - B. and/or more than 1.00% concealed damage caused by rancidity, mold or decay. (No limit as to amount of damaged and RMD kernels).
 - C. No visible A. flavus mold.
 - D. Offensive Odor.

Peanuts found to have a definite sour or offensive odor should be classed as "Segregation 2" when they are to be placed in CCC loan. When such peanuts are found, the inspector should advise the warehouseman that the peanuts should be placed in loan as "Segregation 2." However, if the peanuts are bought by a commercial operator for his own account they should be classed as "Segregation 1," provided they meet the quality requirements of that segregation.

- (1) Report under "Remarks" heading each load found to have a sour or offensive odor whether bought commercially or placed in CCC loan.
Example: "Lot has offensive odor."

Segregation 3. Shall include all farmers' stock peanuts with visible A. flavus mold. (Peanuts with any amount of A. flavus will go into this segregation regardless of the percentage of damaged kernels or whether offensive odor is found in the load). (121)

Moisture (except for seed peanuts).

Moisture shall not exceed 10.49% (rounded to nearest whole number). A handler may acquire peanuts with moisture higher than 10%, but after drying he must obtain an official inspection verifying the moisture is 10% or less before storing or milling. (122)

Seed peanuts

Handlers may acquire for seed purposes farmers' stock peanuts which meet the requirements of Seg. 1. (123)

Seed peanuts produced under the auspices of a State agency which regulates the production of seed peanuts must meet all requirements of Seg. 1 except as follows:

- A. May contain up to 3.49% damaged kernels.
- B. Moisture.
 - (1) Nonstacked Virginia type peanuts may contain up to 12% moisture in all production areas.
 - (2) Runner, Spanish and stacked Virginia type limited to 11% moisture in Virginia- Carolina and southeastern areas and to 10% in southwestern areas.
- C. May contain visible A. flavus mold, provided they are stored and shelled separate from other peanuts.
 - (1) In most instances the inspector can not verify whether the peanuts are registered seed, certified seed or if they have been stacked during harvest. Therefore, it will be necessary to accept the handlers' word. In such cases a statement shall be made under the "Remarks" heading such as "Applicant states certified seed" or "applicant states nonstacked certified seed."

Oil Stock

Handlers who are crushers or act as accumulators may acquire peanuts of a lower quality than Seg. 1 for the sole purpose of crushing. (124)

A. FLAVUS MOLD DETECTION

- (125) As a means of separating loads of aflatoxin-contaminated peanuts from wholesome loads of peanuts the inspection service shall use the "Dickens method" to determine the presence of Aspergillus flavus mold. This rapid method of visual examination, developed by J. W. Dickens, ARS, has proven to be an effective means of identifying this toxin-producing mold. A.flavus mold is considered the primary producer of Aflatoxin.

EQUIPMENT FOR A. FLAVUS DETECTION

- (126) A high-intensity lamp and microscope are required to make a visual detection of A. flavus. The eyepieces and objective lenses of the microscope should be cleaned periodically with lense tissue or eye-glass tissue to avoid accumulation of dust. Do not clean with rough paper or cloth. The plastic cover with each microscope should be placed over it when not in use.

CHARACTERISTICS OF A. FLAVUS MOLD

- (127) A. flavus has certain visible characteristics that differentiate it from many of the other molds that grow on peanuts. The outstanding characteristics are the color of the fungus and the shape and color of the conidial heads (balls). Colored photographs showing highly magnified growths of A. flavus and other kinds of mold will be provided for inspectors' use at each buying point.
- (128) When viewed by the unaided eye, the color of the mold is yellow-green, olive-brown to brown. Olive-green appears to be the most prevalent color in A. flavus growth, therefore, close examination should be made when this color is noted. The surface of the mold has a fuzzy or beady appearance. Advanced growth may reveal what seems to be minute balls. When examined under the microscope, the color of the mold appears much lighter due to the reflections of direct light. The conidial heads have the appearance of a bead on a string or a golf ball on a stem. Only balls that are definitely round, smooth and have a compact appearance should be considered as indicating the presence of A. flavus. The color of the balls may be white or pale shades of yellow, green, olive or brown. Balls showing other shades of color such as blue, purple or black are characteristic of other molds and should be disregarded.

PROCEDURE

Only the loose shelled kernels, other kernels and damaged kernels (129)
will be examined for A. flavus. The three classes will be examined
separately as follows:

After weighing and recording the percentage of each category,
they shall be poured into a shallow pan and spread so the
kernels are only one layer deep. Place the pan under the
high-intensity lamp and shake the pan frequently so that any
moldy surface will be exposed. Pick out the moldy kernels
and further examine under the lamp to determine color and
whether a beady or fuzzy surface is present. Kernels with
cuts, worm holes or sprouts found in the LSK's and OK's
should be checked for concealed mold.

The most suspicious looking kernels will be examined with the
microscope. A positive identification should not be made when only
3 or 4 balls can be found. If additional balls are not found
after checking the entire kernel surface, then other suspicious
kernels should be examined before a definite decision is reached.

REPORTING A. FLAVUS

On every certificate check the proper block indicating whether (130)
kernels affected by A. flavus mold were found.

When loads contain A. flavus and are not sold, a certificate must
be issued stating the facts. Check the block for "A. flavus found ☐ "
and state under "Remarks" heading "No Sale." AS SOON AS POSSIBLE
send one copy of the Certificate to the Washington Inspection office.

CONFIRMING IDENTIFICATION OF A. FLAVUS

The kernel or kernels found to contain A. flavus will be placed in (131)
a small coin envelope or small bag which shall be marked with the
certificate number and date. The container shall be held until the
District Supervisor or Federal Supervisor checks the kernels to
insure that the mold is correctly identified.

REGRADE FOR A. FLAVUS

- (132) The policy of the Inspection Service has always been to average the quality factors when resampling is requested. The marketing agreement requires Seg. 1 and Seg. 2 peanuts to be free from visible A. flavus. Once A. flavus is found in a load, it will be classed as Seg. 3 and examination for A. flavus will not be necessary if regrading is requested. If A. flavus is not found in the first inspection, but a regrade is requested, it will be necessary to make another examination for A. flavus.

APPEAL INSPECTION ON A. FLAVUS

- (133) An appeal inspection may be requested by any financially interested party who believes the inspector has incorrectly identified A. flavus. The individual kernel or kernels shall be held by the inspector and the District Supervisor or Federal Supervisor should be requested to make a final decision.

INSPECTION OF RECLEANED LOADS

- (134) The Inspection Service shall treat recleaned loads as new loads. Inspection results shall be reported without reference to any previous inspection, regardless of where the cleaning may have been done. This ruling applies to A. flavus as well as all other quality factors.

REGRADE FOR A. FLAVUS

- (132) The policy of the Inspection Service has always been to average the quality factors when resampling is requested. This also applies to loads found to contain A. flavus. The Marketing Agreement and Commodity Credit Corporation Regulations require Seg. 1 and Seg. 2 peanuts be FREE from visible A. flavus. Once A. flavus is found in a load, it will be classed as Seg. 3 and examination for A. flavus WILL NOT be necessary if regrading is requested. If A. flavus is NOT FOUND in the first inspection, but a regrade is requested, IT WILL be necessary to make another examination for A. flavus.

Using regular loading and dumping equipment it normally requires at least 2 hours to dump and reload an average size Farmer's Stock load. Therefore when a second inspection is requested for A. flavus and there has been less than 2 hours time lapse from the original inspection, it is reasonable to assume that these are the same peanuts as previously inspected. It is not likely that the conveyance could have been unloaded and reloaded with different peanuts during a time span of less than 2 hours.

For example: a load is found to contain A. flavus and the grower decides not to sell and leaves the buying point premises. A "No Sale" certificate is issued. Less than 2 hours later he returns for inspection at the same buying point and the identity of the load matches that shown on the "No Sale" certificate. Prior to sampling of the load the inspector shall inform the buyer or the grower that the load will be classed as Seg. 3 without checking for A. flavus but all other quality factors will be reported without reference to the previous inspection.

APPEAL INSPECTION ON A. FLAVUS

- (133) An appeal inspection may be requested by any financially interested party who believes the inspector has incorrectly identified A. flavus. The individual kernel or kernels shall be held by the inspector and the District Supervisor or Federal Supervisor should be requested to make a final decision.

INSPECTION OF RECLEANED LOADS

- (134) The Inspection Service shall treat recleaned loads as new loads. Inspection results shall be reported without reference to any previous inspection, regardless of where the cleaning may have been done. This ruling applies to A. flavus as well as all other quality factors.

PREPARING OIL ANALYSIS SAMPLES FOR CCC

When representatives of the area associations of CCC request the Inspection Service to prepare a sample of peanut kernels for oil analysis from outgrade Farmers' Stock peanuts, it **shall** be handled as follows: (135)

The sample for oil content shall include a mixture of all classes of peanut kernels (L.S.K.'s, S.M.K., S.S., O.K. and D.K.) in approximately the same proportions in which they are present. Due to the larger size sample used to determine percentage of L.S.K.'s only a portion of the kernels should be added to the sample for oil analysis. For example: If the sample size for L.S.K.'s is about 2,000 grams and the cleaned sample is to be 1,000 grams, and you find 40 grams of L.S.K.'s, you should save 20 grams or approximately 1/2 of the L.S.K.'s which will be mixed with other classes of kernels after the cleaned sample has been graded. A representative portion of these kernels will be sent to the laboratory. The amount will be specified by the association's representatives.

- (136) The Pneumatic Sampler Probe Pattern cards and instructions dated June 1969 (see page 37) were developed basically for sampling small loads (4 to 6 tons) of Farmers' Stock Peanuts. When sampling larger size loads the number of probes shall be increased as outlined below:

| <u>SIZE OF LOAD</u> | <u>MINIMUM NUMBER OF PROBES</u> |
|---------------------|---------------------------------|
| Up to 6 tons | 5 |
| 7 to 10 tons | 8 |
| 11 to 15 tons | 10 |
| 16 tons or more | 16 |

For 5 probes use only locations indicated by (X).

For 8 probes a combination of (X) and (O) shall be used.

For 10 probes, visually divide the load into 2 halves, use one 5 probe pattern (X) for the front half and another 5 probe pattern for the rear half.

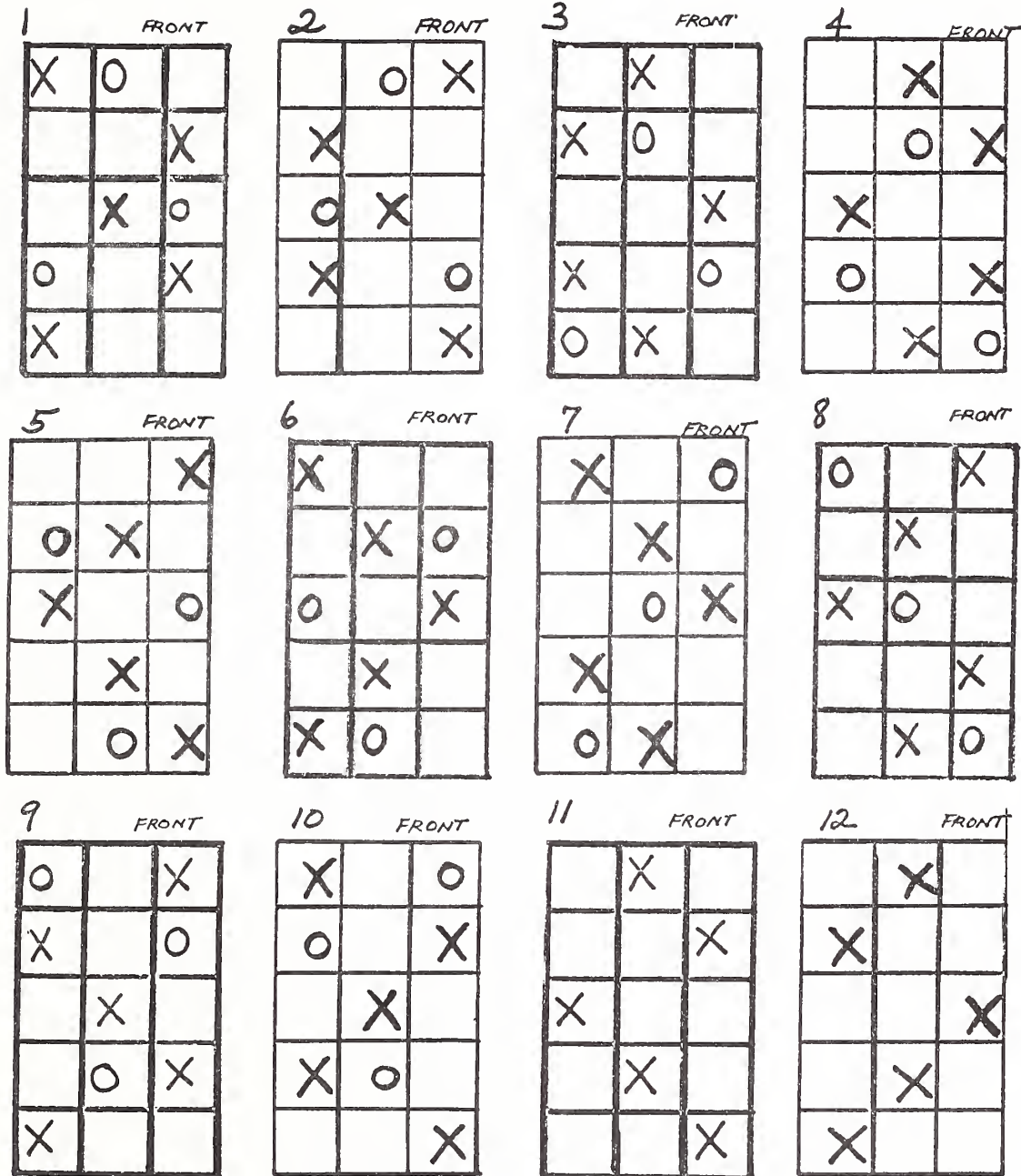
For 16 probes, visually divide the load into 2 halves, use one 8 probe pattern (X + O) for the front half and another 8 probe pattern for the rear half.

Record all pattern numbers on note sheet. When using 2 patterns, the lower pattern number shall be used for the front half of the trailer and the higher number for the rear half of the trailer. Example:

"Sample Pattern No. 2 and 8".

The above table indicates the minimum number of probes required for various size of loads. Some areas may require additional probes depending upon harvest practices in that area. The inspector shall be guided by his supervisor when additional probing is requested but in no case shall the number of probes be less than the minimum outlined above.

PROBE PATTERNS



INSTRUCTIONS:

1. Select at random one probe pattern for each load.
2. Record pattern number on note sheet.
3. For 5 probes use locations indicated by (X).
4. For additional probes a combination of (X) and (O) shall be used.



1

2



3

4





1
2
3
4



5
6
7
8

